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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/746,276      | 12/21/2000  | Ram Hatangadi        | 34613.0200          | 2791             |

7590 04/29/2003  
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EXAMINER

DOUGHERTY, THOMAS M

ART UNIT PAPER NUMBER

2834

DATE MAILED: 04/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                     |                  |  |
|------------------------------|---------------------|------------------|--|
| <b>Office Action Summary</b> | Application No.     | Applicant(s)     |  |
|                              | 09/746,276          | HATANGADI ET AL. |  |
|                              | Examiner            | Art Unit         |  |
|                              | Thomas M. Dougherty | 2834             |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 1-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16-20 is/are rejected.
- 7) ☒ Claim(s) 21-24 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/21/2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
     If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:  
         1. ☐ Certified copies of the priority documents have been received.  
         2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
         3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
     \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
     a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                   | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                          | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>1102</u> | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Drawings***

New corrected drawings are required in this application because the current drawings, were the case to issue, are not of good quality. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claim 16 is rejected under 35 U.S.C. 102(b) as being anticipated by Hayakawa et al. (US 4,440,025). Hayakawa shows (fig. 4) a multi-dimensional transducer having a plurality of elements, said transducer comprising: a conductor (22), a piezoelectric assembly (20) on a first side of said conductor (22), said piezoelectric assembly (20) having a first plurality of cuts in a first direction (downward); a matching layer assembly (23) having a second plurality of aperture cuts in said first direction (downward), wherein said matching layer (23) is coupled to said conductor (22) opposite said piezoelectric assembly (20) such that said first and second pluralities of elevation cuts are aligned to isolate said plurality of elements in an elevation dimension.

Claim 16 is rejected under 35 U.S.C. 102(b) as being anticipated by Briskin et al. (US 4,211,949). Briskin shows (fig. 4) a multi-dimensional transducer having a plurality of elements, said transducer comprising: a conductor (22), a piezoelectric assembly (21) on a first side of said conductor (22), said piezoelectric assembly (21) having a first plurality of cuts in a first direction (downward); a matching layer assembly (23) having a second plurality of aperture cuts in said first direction (downward), wherein said matching layer (23) is coupled to said conductor (22) opposite said piezoelectric assembly (21) such that said first and second pluralities of elevation cuts are aligned to isolate said plurality of elements in an elevation dimension.

Claim 16 is rejected under 35 U.S.C. 102(b) as being anticipated by Le Verrier et al. (US 5,706,252). Le Verrier et al. show (fig. 3) a multi-dimensional transducer having a plurality of elements, said transducer comprising: a conductor (211), a piezoelectric assembly (201) on a first side of said conductor (211), said piezoelectric assembly (201)

having a first plurality of cuts in a first direction (downward); a matching layer assembly (204) having a second plurality of aperture cuts in said first direction (downward), wherein said matching layer (204) is coupled to said conductor (211) opposite said piezoelectric assembly (201) such that said first and second pluralities of elevation cuts are aligned to isolate said plurality of elements in an elevation dimension.

Claim 16 is rejected under 35 U.S.C. 102(b) as being anticipated by Hanafy (US 6,043,589). Hanafy shows (fig. 2) a multi-dimensional transducer having a plurality of elements (24), said transducer comprising: a conductor (44), a piezoelectric assembly (30, 32) on a first side of said conductor (44), said piezoelectric assembly (30, 32) having a first plurality of cuts in a first direction (35); a matching layer assembly (38) having a second plurality of aperture cuts in said first direction (35), wherein said matching layer (38) is coupled to said conductor (44) opposite said piezoelectric assembly (30, 32) such that said first and second pluralities of elevation cuts are aligned to isolate said plurality of elements in an elevation dimension.

Claim 16 is rejected under 35 U.S.C. 102(e) as being anticipated by Bureau et al. (US 6,341,408). Bureau et al. show (fig. 2) a multi-dimensional transducer having a plurality of elements, said transducer comprising: a conductor (P), a piezoelectric assembly (Tij) on a first side of said conductor (P), said piezoelectric assembly (Tij) having a first plurality of cuts in a first direction (downward); a matching layer assembly (Aij<sub>1</sub>) having a second plurality of aperture cuts in said first direction (downward), wherein said matching layer (Aij<sub>1</sub>) is coupled to said conductor (P) opposite said

piezoelectric assembly (Tij) such that said first and second pluralities of elevation cuts are aligned to isolate said plurality of elements in an elevation dimension.

Claims 16 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Sliva et al. et al. (US 5,297,553). Sliwa et al. show (fig. 2) a multi-dimensional transducer having a plurality of elements, said transducer comprising: a conductor (2), a piezoelectric assembly (1) on a first side of said conductor (2), said piezoelectric assembly (1) having a first plurality of cuts in a first direction (5); a matching layer assembly (6) having a second plurality of aperture cuts in said first direction (5), wherein said matching layer (6) is coupled to said conductor (2) opposite said piezoelectric assembly (1) such that said first and second pluralities of elevation cuts are aligned to isolate said plurality of elements in an elevation dimension.

Each of said first and second pluralities of cuts (5) is filled with an acoustically-attenuative material (col. 4, ll. 59-65).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bureau et al. (US 6,341,408) in view of Sliwa et al. (US 5,297,553). Given the invention of Bureau et al. as noted above, they further show (fig. 2) a plurality of cuts (not

numbered, but perpendicular laterally to the first cuts and also downward in direction) in a second direction.

Said plurality of cuts in said second direction isolate said plurality of elements (Tij) in an azimuth direction.

Said plurality of cuts in said second direction comprise major element cuts that isolate said plurality of elements (Tij) in an azimuth direction.

They do not show first and second pluralities of cuts filled with an acoustically-attenuative material.

Given the invention of Sliwa et al. as noted above, they fail to show a plurality of cuts in a second direction.

It would have been obvious to one having ordinary skill in the art to fill the first and second pluralities of cuts filled with an acoustically-attenuative material in the invention of Bureau et al. at the time of their invention in order to provide mechanical “stiffening, thermal heatsinking and electrical breakdown improvement functions as well as outgassing/venting reduction functions” as Sliwa et al. note at the bottom of column 4.

#### ***Allowable Subject Matter***

Claims 21-24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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The following is a statement of reasons for the indication of allowable subject matter: the prior art fails to show or fairly suggest kerf-type cuts in a second direction which further comprises a plurality of minor element cuts.

**Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The remaining prior art cited reads on at least some aspects of the claimed invention.

Direct inquiry concerning this action to Examiner Dougherty at (703) 308-1628.

tmd  
tmd

April 24, 2003

*Thomas M. Dougherty*  
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